

REMARKS

Rejections Based on Prior Art

Claims 1-3, 53, 55 and 75-78 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Brinker et al. (U.S. Patent No. 5,858,457) ("Brinker") in view of Cho et al. (U.S. Patent No. 5,504,042) ("Cho").

Claims 1-3, 53 and 78 have been canceled by this amendment. Claims 55 and 75-77 remain in the case.

In an office action response filed on June 8, 2004, Applicant's had amended claim 55 to include "on a substrate prepared by evaporation from silica precursors having greater than eight carbon atoms for every one silica atom and a surfactant."

The office action mailed on July 29, 2004, stated "that the use of silica precursors having greater than eight carbon atoms for every silica atoms clearly fails to exclude the applied art from the scope thereof, particularly in view of the fact that the instantly claimed invention as being both relatively and absolutely, which appears to be anticipated by a dehydroxylated silica film, as set forth above, and it should be noted that the hydroxyl and alkoxy groups are removed during dehydroxylation, i.e., the carbon number of the alkoxy group of the intermediary precursors is absent from the invention as claimed."

However, the claim 55 does not claim a 'dehydroxylated thin film.' Claim 55 is directed to a thin film having more than eight carbon atoms to every silica atom. The use of carbon for stability is an alternative to dehydroxylation. Brinker and Cho do not teach the use of carbon beyond the use of TEOS. The additional precursor of the claimed invention results in this carbon to silica ratio. This amendment is supported by the discussion on pages 23 and 24, with regard to Example 5.

Claim 55 has been amended to move the limitation with regard to the carbon to silica ratio into the main body of the claim. Claim 75 has been amended to include this characteristic of the film. As Brinker and Cho do not teach a film having the relationship between carbon and silica atoms as claimed, it is submitted that these claims are patentably distinguishable over the prior art and allowance of these claims is requested.

Claims 76 and 77 and inherently contain all of the limitations of that claim. As discussed above, the prior art does not teach, show nor suggest all of the limitations of the base claim, much less the further embodiments of the dependent claims. It is therefore submitted that claims 76 and 77 are patentably distinguishable over the prior art and allowance of these claims is requested.

In addition, the combination of references does not meet the standards to establish a *prima facie* case of obviousness, and the combination of references is invalid.

One of the requirements needed to establish a *prima facie* case of obviousness is that there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine the reference teachings. The combination of Brinker and Cho is invalid because there is no motivation to combine the references.

“There are three possible sources for a motivation to combine references: the nature of the problem to be solved, the teachings of the prior art, and the knowledge of persons of ordinary skill in the art.” *In re Rouffert*, 149 F.3d 1350, 1357, 47 USPQ2d 1453, 1457-58 (Fed. Cir. 1998). The level of skill in the art cannot be relied upon to provide the suggestion to combine references. *Al-Site Corp. v. VSI Int'l Inc.*, 174 F.3d 1308, 50 USPQ2d 1161 (Fed. Cir. 1999).

“The mere fact that the references can be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination.” *In re Mills*, 916 F. 2d 680, 16 USPQ2d 1430 (Fed. Cir. 1990). As the two references are directed to solving different problems, there is no motivation or suggestion to combine their teachings.

Brinker does not show, teach or suggest any concerns or issues with regard to film stability at higher humidity levels. Indeed, at col. 10, line 15, Brinker discusses the optimal humidity for ordered porosity being at 60% relative humidity, with no mention as to the stability of the film. In contrast, Cho discusses dehydroxylating the film to achieve maximum porosity. See Cho, col. 2, lines 13-39. Cho mentions replacing the hydroxyl groups with more stable ‘surface groups,’ but never addresses the issue of stability of the film itself. See Cho, col. 4, lines 35-37. Further, none of the detrimental effects mentioned by Cho in col. 2 includes film instability.

As Brinker is directed to achievement of a film having highly ordered porosity and Cho is directed to achievement of a film having high porosity there is nothing in Cho to suggest modification of Brinker to perform any steps resulting in a dehydroxylated thin film to promote stability at high levels of relative humidity. The nature of the problem of being solved by the two references is different between them and between the two references and the prior art.

Further, even if the combination of references were to teach all aspects of the claimed invention, the combination is not valid because there is no objective reason to combine the

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teachings of the references. As discussed above, the two references are directed to two different processes for manufacturing thin films, one is directed to highly ordered porosity and the other is directed to high porosity. There is no objective reason to combine a reference using dehydroxylation to promote high porosity (Cho) and makes not mention of stability, with a reference that does not mention dehydroxylation or stability, to render obvious a claim directed to a dehydroxylated film having disordered porosity. The fact that these were both known in the art at the time of invention "...is not sufficient to establish a prima facie case of obviousness without some objective reason to combine the teachings of the references." *Ex parte Levingood*, 28 USPQ2d 1300 (Bd. Pat. App. & Inter. 1993).

Therefore, the combination of references is invalid as there is no motivation to combine the references. As some motivation to combine the references is required to establish a prima facie case of obviousness, the prima facie case has not been made. Therefore, the claimed subject matter is non-obvious over the prior art.

For the foregoing reasons, reconsideration and allowance of claims 55 and 75-77 of the application as amended is solicited. The Examiner is encouraged to telephone the undersigned at (503) 222-3613 if it appears that an interview would be helpful in advancing the case.

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